LANTERN WOODS POND

Hamilton County

2006 Supplemental Evaluation

Date of Survey: 7/25/2006

Biologist: Jamie L. Smyth

Survey Objectives: Determine if the predatory/prey balance has improved as a result of vegetation control efforts at Lantern Woods Pond.

Methods: Fish collection effort consisted of 20 min of DC daytime electrofishing. Electrofishing settings were adjusted to provide a larger sample of fish (Smith-Root box set at 707 volts and one boom deployed rather than two). Collected fish were measured to the nearest 0.1 in TL. Proportional stock density (PSD) was calculated for bluegill and largemouth bass (Anderson and Neumann 1996). The Bluegill Fishing Potential Index (BGFP) was used to describe the bluegill fishery (Ball and Tousignant 1996). Scale samples were taken for age and growth analysis.

Summary: Lantern Woods Pond is approximately 3 acres and located within the Cheeney Creek Nature Area which is owned by the Fishers Parks and Recreation Department (FPRD). Channel catfish have been annually stocked since 2004 (300, 10 in fish). The initial (and only) survey of Lantern Woods Pond was conducted in 2003 (Wisener 2004).

There were 149 fish collected and three species comprised the sample. A total of 124 bluegill was collected that ranged in length from 1.5 to 5.5 in and averaged 2.2 in. Bluegill CPUE was 375.8/h. Bluegill PSD was 0, since there were no 6.0 in or larger bluegill collected. The BGFP was 6 which equates to a "poor" rating for the bluegill fishery.

There were 17 largemouth bass collected that ranged in length from 1.5 to 15.1 in and averaged 9.6 in. The CPUE for largemouth was 51.5/h. Largemouth bass PSD was 75. Only 12% of largemouth bass sampled met or exceeded the 14-in minimum size limit. There were five YOY, zero age 1, and one age 2 bass collected. Relatively high PSD and the lack of age 1

and 2 year old largemouth indicates poor recruitment and a fishery comprised of older and larger fish.

The only other fish collected during the survey were seven green sunfish. Green sunfish are of little interest to anglers since their length rarely exceeds 6 in.

Bluegill are still dominating the fishery (84%) as in 2003 (88%). Largemouth bass recruitment continues to suffer likely due to predation on bass eggs and fry by the overabundant bluegill and from competition among bluegill and young largemouth for food. A few measures should be taken to help remedy this unbalance.

The first is to further reduce the amount of vegetation in the lake. Though a few vegetation treatments had been made prior to the survey, dense vegetation (mainly chara) was still evident throughout the pond. It is recommended that future treatments should not only focus on maintaining angler access, but also at reducing the overall abundance of submergent vegetation. In small bodies of water with stunted bluegill populations, as in the case of Lantern Woods, it would be beneficial to nearly eliminate all vegetation present. This would allow largemouth bass to more effectively prey upon bluegill, leading to a reduction in bluegill abundance and improved bluegill growth.

Secondly, anglers are encouraged to harvest bluegill of any size and release all bass caught so they can continue to prey on bluegill. In an attempt to help correct the imbalance in the fishery, up to 60 (20 per acre) largemouth bass (10 inches or larger) should be stocked when available. These bass should come from state fish hatcheries.

Another fishery survey should be conducted at Lantern Woods in a few years to determine if the management efforts have improved the predator/prey balance. A total of 300, 10-in channel catfish are scheduled to be stocked in the fall of 2008.

LITERATURE CITED

Anderson, R.O. and R.M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 in B.R. Murphey and D. W. Willis, editors. Fisheries Techniques, 2nd Edition. American Fisheries Society, Bethesda, Maryland.

Ball, R.L. and J.N. Tousignant. 1996. The Development of an Objective Rating System to Assess Bluegill Fishing in Lakes and Ponds, Research Report. Indiana Department of Natural Resources. Indianapolis, Indiana. 18 pp.

Wisener, J.R. 2004. Lantern Woods Pond, 2003 Fish Management Report. Indiana Department of Natural Resources. Indianapolis, Indiana. 10 pp.

Submitted by: Jamie L. Smyth, Assistant Fisheries Biologist
Date: January 2, 2008

Approved by: J. Rhett Wisener, Fisheries Biologist

Approved by: Brian M. Schoenung, Fisheries Supervisor

Date: January 31, 2008

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT					
*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)	WEIGHT (pounds)	PERCENT
Bluegill	124	83.8	1.5 - 5.5	1.59	11.5
Largemouth bass	17	11.5	1.5 - 15.1	12.18	88.0
Green sunfish	7	4.7	1.5 - 2.3	0.07	0.5
TOTAL	148			13.84	

*Common names of fishes recognized by the American Fisheries Society.

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5	59	48.0	0.01	1	19.5				
2.0	29	23.4	0.01	1	20.0				
2.5	22	17.7	0.01	2	20.5				
3.0	5	1.0	0.02	2	21.0				
3.5	6	4.8	0.03	2,3	21.5				
4.0	1	0.8	0.04	3	22.0				
4.5	1	0.8	0.06	3	22.5				
5.0					23.0				
5.5	1	0.8	0.11	4	23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	124			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	375.8 / hr	GILL NET CATCH	NA	TRAP NET CATCH	NA

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5	3	17.6	0.01		19.5				
2.0	2	11.8	0.01		20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	17			
9.0									
9.5									
10.0									
10.5	1	5.9	0.54	2					
11.0									
11.5	2	11.8	0.72	3					
12.0	1	5.9	0.82	not aged					
12.5	3	17.6	0.95	4					
13.0	2	11.8	1.08	4					
13.5	1	5.9	1.20	5					
14.0	1	5.9	1.38	not aged					
14.5									
15.0	1	5.9	1.74	not aged					
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	51.5 / hr	GILL NET CATCH	NA	TRAP NET CATCH	NA

Bluegill Age-length Key															
Length	Total #	Sub-	Age												
group (in)	number	sample	1	2	3	4	5	6	7	8	9	10	11	12	13
1.0															
1.5	59	6	59												
2.0	29	5	29												
2.5	22	5		22											
3.0	5	3		5											
3.5	6	3		4	2										
4.0	1	1			1										
4.5	1	1			1										
5.0															
5.5	1	1				1									
6.0															
Total	124	25	88	31	4	1	0	0	0	0	0	0	0	0	0

Largemouth bass Age-length Key															
Length	Total #	Sub-	Age												
group (in)	number	sample	1	2	3	4	5	6	7	8	9	10	11	12	13
1.0															
1.5	3	0													
2.0	2	0													
2.5															
3.0															
3.5															
4.0															
4.5															
5.0															
5.5															
6.0															
6.5															
7.0															
7.5															
8.0															
8.5															
9.0															
9.5															
10.0															
10.5	1	1		1											
11.0															
11.5	2	2			2										
12.0	1														
12.5	3	3				3									
13.0	2	2				2									
13.5	1	1					1								
14.0	1	0													
14.5															
15.0	1	0													
Total	17	9	0	1	2	5	1	0	0	0	0	0	0	0	0

Mean Length at Capture

Bluegill

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	88	1.9	0.06	0.03	1.9	2.0
2	31	3.0	0.13	0.06	2.8	3.1
3	4	4.1	0.23	0.24	3.6	4.6
4	1	5.8	NA	NA	NA	NA

Largemouth bass

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	0	0.0	0.00	0.00	0.0	0.0
2	1	10.8	NA	NA	NA	NA
3	2	11.8	0.00	0.00	11.8	11.8
4	5	13.0	0.08	0.12	12.7	13.2
5	1	13.8	NA	NA	NA	NA

Species	YEAR CLASS	NUMBER OF FISH AGED	SIZE RANGE	BACK CALCULATED LENGTH (inches) AT EACH AGE				
Bluegill				I	II	III	IV	V
Intercept= 0.8	2005	11	1.5-2.4	1.4				
	2004	10	2.5-3.6	1.5	2.2			
	2003	3	3.7-4.6	1.6	2.4	3.0		
	2002	1	5.5	1.4	1.8	2.8	3.9	

Species	YEAR CLASS	NUMBER OF FISH AGED	SIZE RANGE	BACK CALCULATED LENGTH (inches) AT EACH AGE				
Largemouth bass				I	II	III	IV	V
Intercept= 0.8								
	2004	1	10.7	2.9	10.3			
	2003	2	11.5-11.7	2.5	5.4	11.4		
	2002	5	12.6-13.2	2.9	6.2	10.4	12.3	
	2001	1	13.9	2.7	5.3	6.6	11.2	13.3